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Our Ref: P7434\GAL

Date: 31st January 2017

HT Forrest Ltd
The Yard
Westhoughton
Bolton
BL5 3NU

Attention of Mr I Calder

BY EMAIL ONLY

Dear Ian,

Re: Gas Addendum Letter for Marsh Lane, New Mills

The gas monitoring programme at the above site is now complete. The assessment below supersedes the information in the Site Appraisal Reports undertaken by GRM's (ref: GRM/P7434/F.1 Rev.A, dated November 2016) and CL Associates (ref: 42062/1, dated September 2004) and should be submitted to the regulatory bodies for approval.

The Phase II Site Appraisal identified the following potential sources of ground gas:

- Deep made ground - landfill type material and reworked natural material.
- The site is not in an area where radon protective measures are required.

GRM Ground Investigation Summary

The recent GRM ground investigation identified made ground extending to depths of up to 7.0m begl. Made ground with a greater quantity of anthropogenic material was encountered predominantly towards the northwest and is considered to be associated with the former unlicensed landfill. This made ground generally comprised loose brown or grey locally black clayey sand with abundant gravel of sandstone, siltstone, plastic, metal, glass, brick, ceramic, cloth and rubber with asbestos, ash, coal and clinker.

Across the remainder of the site to the east and south the made ground was considered to be reworked natural materials associated with the backfilling of the former quarry. This made ground was recorded as loose to medium dense clayey, fine to coarse sand with abundant gravel and cobbles of sandstone.

Made ground was not found at depths greater than 1m within the northwestern corner of the site and is underlain by superficial Glacial Till.

The solid geology was confirmed as sandstone from the Woodhead Hill Rock Formation.

CL Associates Gas Results

Prior to the recent works CL Associates installed two gas monitoring standpipes within the made ground materials (BH1 and BH2) drilled at the northern end of the site. CL Associates carried out a total of three gas monitoring visits between 15th and 31st January 2003.

ESG monitored the boreholes installed from CL Associates during 2011, however BH2 could not be located at the time and the full report was not available to GRM. Therefore, the ESG data has not been included within the assessment.

The CL Associates gas results are summarised below;

Well ID (No. of Readings)	Response Zone / Strata	Methane (%v/v)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Gas Flow Max (l/h)	Ground-Water Level (mbegl)
<i>CL Associates</i>						
BH1 (3)	1.0-5.0m / MG	0.0	0.1-1.0	17.9-19.7	3.0	5.20-5.23
BH2 (3)	1.0-7.5m / MG	0.0	0.1-0.4	18.8-20.5	3.2	5.48-5.49
Notes: NS= Natural Strata, MG= Made Ground Atmospheric Pressure: 961mb – 1002mb						

Copies of the borehole logs and gas results are enclosed.

GRM Gas Results

Since the CL Associates results GRM has installed a further 6 monitoring wells and carried out fortnightly gas monitoring over a three month period from 25th October 2016 to 6th January 2017, to assess the risk posed to the end user from potentially harmful ground gases.

As the proposed end use has been classified as high sensitivity (residential with gardens), six 35mm gas/water monitoring standpipes have been installed by GRM across the site. WS107 and WS108 targeted made ground associated with the former landfill site (high generation potential) and WS104-WS106 targeted made ground associated with the former quarry. WS101 targeted the Glacial Till, where no made ground was present and to determine the potential for the migration of ground gases off site.

WS101 was not found during the first monitoring round and WS106 was destroyed prior to the fourth monitoring round.

The GRM gas results have been summarised below;

Well ID (No. of Readings)	Response Zone / Strata	Methane (%v/v)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Gas Flow Max (l/h)	Ground-Water Level (mbegl)
<i>GRM Results</i>						
WS101 (5)	1-5m / NS	0.0	0.0-2.0	17.4-20.2	0.0	4.03-4.63
WS104 (6)	0.7-4m / MG	0.0	0.4-2.7	16.0-20.5	0.1	DRY
WS105 (6)	0.6-5m / MG	0.0	0.1-1.5	17.9-20.8	0.0	DRY
WS106 (4)	0.5-2.5m / MG	0.0	0.0-0.1	20.2-21.0	0.0	5.13
WS107 (6)	1-5.3m / MG	0.0	0.0-1.0	19.1-20.8	0.0	5-5.2
WS108 (6)	1-5m / MG	0.0	0.5-1.2	19.0-20.3	0.0	DRY
Notes: NS= Natural Strata, MG= Made Ground Atmospheric Pressure: 987mb-1032mb						

Copies of the GRM window sample logs and gas results are enclosed.

Groundwater Monitoring Results

Three groundwater monitoring wells were installed by GRM within rotary boreholes drilled into the Woodhead Hill Rock (RB101, RB104 and RB106) to determine the presence of groundwater within the sandstone.

The recent GRM groundwater monitoring program has confirmed the general presence of deep groundwater beneath the site at depths in between 4.03m and 7.85m begl. In summary:

- Groundwater within the Made ground was encountered between 5.00m and 5.20m begl.
- Groundwater within the Glacial Till in WS101 was encountered between 4.03m and 5.13m begl.
- Groundwater within the Woodhead Hill Rock was encountered between 5.30m and 7.85m begl.
- WS104-WS106 and WS108 did not record any groundwater during the monitoring period.

It should be noted that groundwater was consistently present within the deep boreholes during each monitoring round.

Ground Gas Risk Assessment

Given the 'high' sensitivity of the proposed development (residential with gardens) and 'high' ground gas generation potential (refuse tip mid-1960s to 1980s) a monitoring programme of up to 12 months may be required under BS8576:2013.

Taking into account that a significant proportion of degradable materials were not encountered within the made ground, it is considered that there could be confined areas of more degradable materials present that were not identified during the recent works.

Nine gas monitoring visits have been completed at the site, effectively over a 4 month period.

Made Ground

The gas results from CL Associates and GRM have been assessed in accordance with current guidance BS8485:2015 Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings.

CL Associates recorded a maximum flow rate of 3.2l/hr, and GRM recorded a maximum steady state carbon dioxide concentration of 2.7% v/v. No methane was detected above the monitor's lower limits of detection from either monitoring period. Therefore, in the following assessment a default methane concentration of 0.1% v/v have been used.

Using the maximum default methane concentration of 0.1% v/v and the maximum flow rate of 3.2l/hr a Qhg of 0.0032 l/hr has been calculated for methane. Using the maximum recorded steady state carbon dioxide concentration of 2.7% v/v and the maximum flow rate of 3.2 l/hr a Qhg of 0.0864 l/hr has been calculated for carbon dioxide. On this basis, the GSV for the site is determined as 0.0864 l/hr for the made ground.

As the GSV is greater than 0.07l/hr, but less than 0.7l/hr, the site has been assessed as 'Characteristic Situation 2' (low hazard potential) as outlined in Table 2 of BS8485:2015. Therefore, gas protection measures are required for the proposed development where deep made ground is present.

It should be noted that the GSV when compared against guidance in CIRIA C665 is less than 0.16 l/hr for methane and 0.78 l/hr for carbon dioxide which would result in a 'Green' traffic light classification for the site and therefore gas protection measures would not be required.

Natural Strata (Glacial Till)

Within the northwest corner, made ground was not encountered, therefore, the following assessment has been carried out to determine the potential migration of ground gases from the adjacent deep made ground.

Methane concentrations and flow rates above the monitor's lower limits of detection were not detected during monitoring period. Therefore, in the following assessment a default methane concentration of 0.1% v/v and a default flow rate of 0.1l/hr have been used for Glacial Till.

Using the default methane concentration of 0.1%v/v and the default flow rate of 0.1l/hr a Qhg of 0.0001 l/hr has been calculated for methane. Using the maximum recorded steady state carbon dioxide concentration of 2%v/v and the default flow rate of 0.1l/hr a Qhg of 0.002 l/hr has been calculated for carbon dioxide. On this basis the GSV for the site is determined as 0.002 l/hr.

As the GSV is less than 0.07l/hr and the maximum recorded concentrations of methane and carbon dioxide are less than 1%v/v and 5%v/v respectively, this area of the site has been assessed as 'Characteristic Situation 1' (very low hazard potential) as outlined in Table 2 of BS8485:2015, for which gas protection measures are not required for these plots.

A delineation plan of protection measures is enclosed.

It is recommended that ventilated suspended floor slabs (i.e. beam and block) are used within these proposed plots which will provide a sufficient level of protection given the proximity to the identified gas source and the potential for future migration of ground gases.

Conclusions

The gas monitoring results and subsequent gas risk assessment has demonstrated that the site is borderline with regard to the risk posed. Using the most recent guidance (BS8485:2015), the risk is considered to be Low, but gas protection measures would be required. However, CIRIA C665 guidance, which relates specifically to low rise housing, such as that proposed, indicates that gas protection measures are not required.

Overall, it is considered that the perceived risk is greater than the actual risks; however, given the borderline nature of the assessment, it is recommended that without further monitoring and assessment to improve the dataset, a conservative approach should be taken and that gas protection measures should be adopted.

Whilst further monitoring could be undertaken, it is considered that the amount of additional information needed would be such that it would cause either significant delays to the programme, or the additional costs would outweigh the savings of not installing gas protection measures.

Once this assessment has been agreed with the appropriate regulators, a Gas Protection Measures Design and Verification Plan will be required (in line with CIRIA C735); however, at this stage, allowance should be made for the use of beam and block floors and a proprietary gas resistant membrane (which meets the requirements of BS8584:2015 such as Monarflex Reflex Super) installed to an appropriate standard by a qualified contractor with independent validation and integrity testing.

As gas protective measures are required, it is recommended that a Gas Protection Measures Design and Verification Plan is produced and agreed with the Local Authority.

If you would like us to undertake this on your behalf, then please provide contact details and a Planning Reference.

We trust this is suitable for your current requirements, should you require any further information or would like any clarification of the points raised please do not hesitate to contact us.

Yours sincerely,
for GRM Development Solutions Ltd



Sonia Singh BSc (Hons) FGS
Assisting Geo-environmental
Engineer

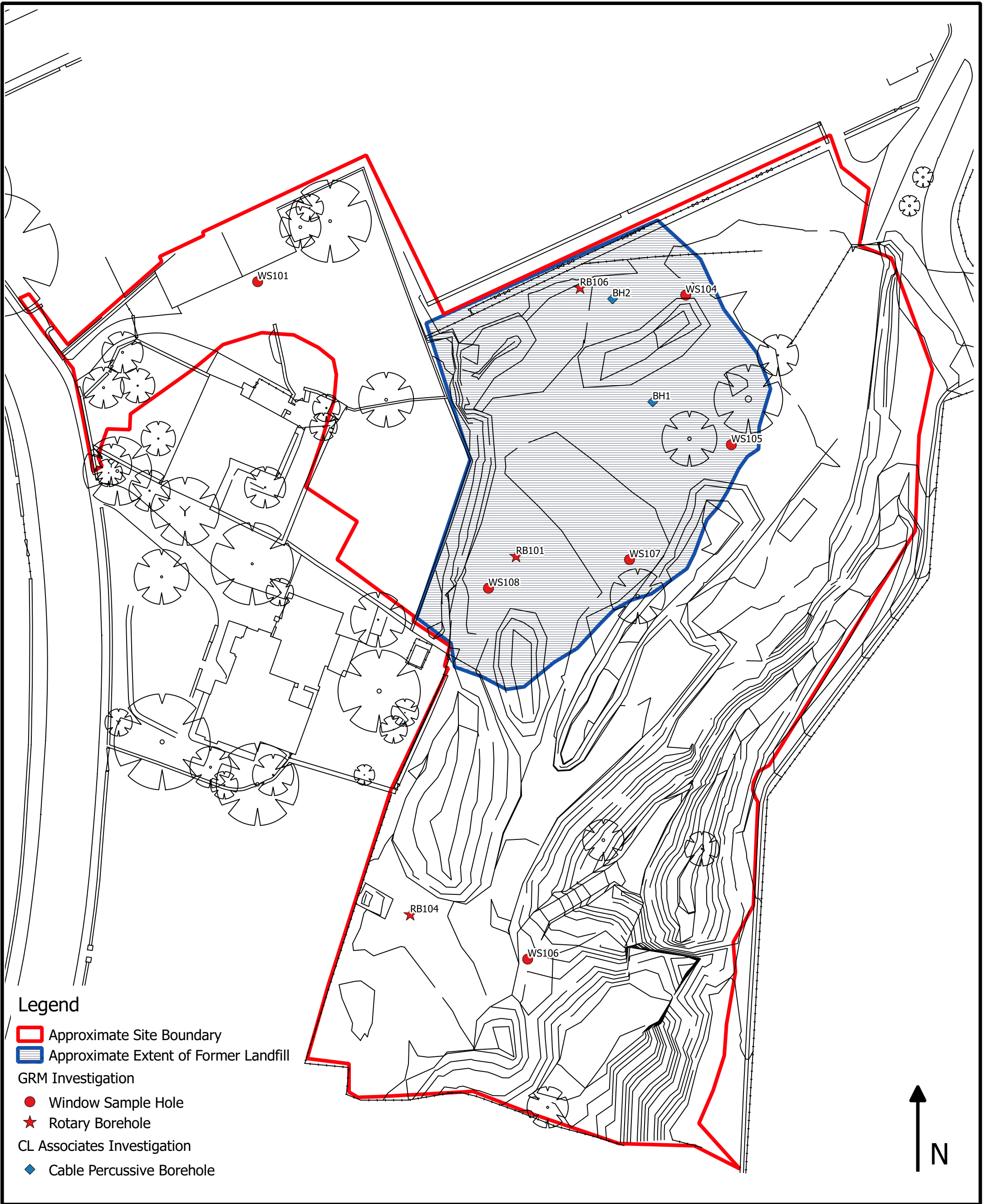


Charlotte Taylor BSc (Hons)
MEnvSc
(Senior Environmental Scientist)



Richard Upton BSc (Hons) MSc
CEnv
(Director)

Enc:
P7434 Gas Monitoring Location Plan
P7434 CL Associates Borehole Logs and Gas Monitoring Results
P7434 GRM Exploratory Hole Logs and Gas Monitoring Results
P7434 Gas Protection Measures Plan



Legend

- Approximate Site Boundary
- Approximate Extent of Former Landfill
- GRM Investigation
 - Window Sample Hole
 - ★ Rotary Borehole
- CL Associates Investigation
 - ◆ Cable Percussive Borehole

NOTES:

CLIENT: HT Forrest Ltd	TITLE: Monitoring Hole Location Plan	PROJECT No: P7434	DATE: 11/2016	 GRM Development Solutions Ltd Laurus House, First Ave, Centrum 100, Burton-on-Trent, Staffordshire Tel: 01283 551 249 Fax: 01283 211 968 mail@grm-uk.com www.grm-uk.com
		DESIGN/DRAWN: SS	ISSUE: FINAL	
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PROJECT: Land off Marsh Lane, New Mills				

Borehole Log

Drilled by AJL Logged by AJL Checked by CAR		Start 02/01/2003 End 02/01/2003		Equipment, Methods and Remarks Dando 150 Cable Percussion Rig In tree clearing opposite steel container		Depth from to Diameter Casing Depth 0 00m		Ground Level Coordinates National Grid	
Samples and Tests						Strata			
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instruments	
0 30	D 1				Grass overlying TOPSOIL	0 10			
0 50-1 00	B 2				MADE GROUND: Soft brown sandy gravelly CLAY Gravels are subangular to subrounded, fine to coarse of ash, brick, stone, wood, metal and occasionally rubber.	(1 10)			
1 30	D 3				MADE GROUND: Soft orange brown sandy gravelly CLAY Gravels are angular to sub angular, fine to coarse of sandstone, mudstone, brick, various other lithologies and occasional wood	1 20			
1 50-1 95 1 50-2 00	SPT C B 4	N=4 (1 1/1.1 1.1)	1 50						
2 50	D 5								
3 00-3 45 3 00-3 50	SPT C B 6	N=5 (1,1/1.1.2.1)	2 50			(4 70)			
4 00	D 7								
4 50-4 85 4 50-5 00	SPT C B 8	51 (1,1/1.7.43 for 50mm)	3 20						
5 40 5 50	W 10 D 9								
6 00-6 03 6 00	SPT C D 11	(75 for 25mm)	3 20	5 40	Fine brown SANDSTONE recovered as gravels and cobbles. EXPLORATORY HOLE ENDS AT 6 00 m	5 90 6 00		SP	
Depth	Type & No	Records	Date Casing	Time Water					
Groundwater No. Struck Post strike behaviour Depth sealed (m) 1 5 90 Rose to 5 40 m after 20 minutes					Depth Related Remarks From to (m)		Chiselling Depths (m) 4 80-5 10 45 mins Chisel		
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.					Project New Mills, Derbyshire Project No. 42062 Carried out for		Borehole BH1 Sheet 1 of 1		

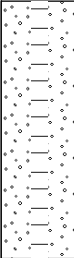
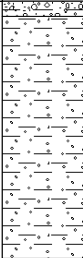
Borehole Log

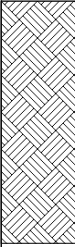
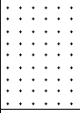
Drilled by AJL Logged by AJL Checked by CAR		Start 03/01/2003 End 03/01/2003		Equipment, Methods and Remarks Dando 150 Cable Percussion Rig Infront of main wooded area opposite steel container		Depth from to Diameter Casing Depth		Ground Level Coordinates National Grid	
Samples and Tests						Strata			
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level/ (Thickness)	Legend	Backfill/ Instruments	
0.50-1.00	B 1				Grass overlying TOPSOIL	0.10			
1.30	D 2				MADE GROUND: Soft to firm slightly orange brown to brown sandy gravelly cobbly CLAY. Gravels and cobbles are subangular to subrounded fine to coarse of ash, brick, sandstone, concrete and occasional wood and glass				
1.50-1.88	SPT C	N=4 (1/1, 1.1, 1)	1.50						
1.50-2.00	B 3								
2.50	D 4								
3.00-3.45	SPT C	N=8 (1.1/2, 1.2, 3)	1.50		3.00-3.50 m Becoming firm				
3.00-3.50	B 5								
4.00	D 6								
4.50-4.95	SPT C	N=13 (1.2/1, 2.4, 6)	4.50						
4.50-5.00	B 7				4.50-6.50 m Medium dense silty cobbly sands and gravels of sandstone and occasional brick				
5.50	D 8								
5.50	W 9								
6.00-6.45	SPT C	N=12 (2.1/2, 3.5, 2)	6.00	5.50					
6.00-6.50	B 10								
7.00	D 11								
7.50-7.95	SPT C	N=14 (1.1/2, 2.4, 6)	7.50	5.50					
7.50-8.00	B 12								
					Fine grey SANDSTONE recovered as gravels and cobbles	7.60		SP	
					EXPLORATORY HOLE ENDS AT 8.00 m	(0.40)			
						8.00			
Groundwater No. Struck (m) Post strike behaviour Depth sealed (m)					Depth Related Remarks From to (m)		Chiselling Depths (m)		
1 5.70 Rose to 5.50 m after 20 minutes									
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.					Project New Mills, Derbyshire Project No. 42062 Carried out for		Borehole BH2 Sheet 1 of 1		

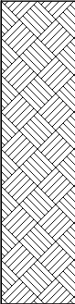
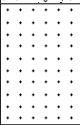
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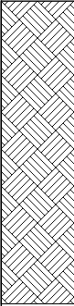


		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS101 Sheet 2 of 2		
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.23		
Client: Forrest					GRM Project Ref: P7434			Coordinates 400647 E 385387 N		
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		4.20 - 4.30	D	N=50 (7,10/50 for 275mm)		4.20	176.03		Very stiff, (High strength), brown, slightly gravelly, CLAY with low cobble content. Gravel and cobble are fine to coarse, sandstone, mudstone, siltstone. GLACIAL DEPOSITS	
		4.90 - 5.00 5.00	D S			5.00	175.23			
Crew: Dynamic Sampling Ltd.					Logger: SS			Weather: Dry		
Equipment: Window Sampling Rig										
Reason for termination of borehole: Refusal on stiff clay.										
Groundwater Remarks: Damp and then becoming wet from 3.6m.										
General Remarks:										
Hole Started: 17/10/2016		Hole Complete:			Version: FINAL		Scale: 1:25			

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS102 Sheet 1 of 1		
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 182.18		
Client: Forrest						GRM Project Ref: P7434		Coordinates 400664 E 385361 N		
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		0.20 - 0.30	D			0.20	181.98		Grass over dark brown, clayey, SAND. Sand is fine to coarse. TOPSOIL	1 2 3 4
		0.50 - 0.60	D			0.40	181.78		Loose, dark brown, very sandy, GRAVEL. Sand is fine to coarse. Gravel is fine to medium, sub-angular, quartzite and sandstone. GLACIAL DEPOSITS	
		0.90 - 1.00	D			0.80	181.38		Strong SANDSTONE recovered as fine to coarse, angular to sub-angular Gravel and Cobbles. WOODHEAD HILL ROCK	
									End of Borehole at 0.80m	
Crew: Dynamic Sampling Ltd					Logger: SS			Weather:		
Equipment: Window Sampling Rig										
Reason for termination of borehole: Refusal on Rock										
Groundwater Remarks: No groundwater observed.										
General Remarks:										
Hole Started: 17/10/2016		Hole Complete:				Version: FINAL		Scale: 1:25		

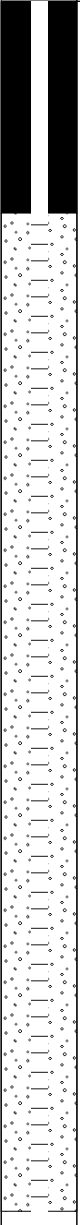
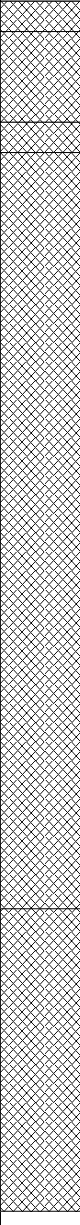
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS103 Sheet 1 of 1	
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 182.25	
Client: Forrest						GRM Project Ref: P7434		Coordinates 400663 E 385348 N	
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description
		Depth	Type	Result					
		0.20 - 0.30	D	48 (10,15/48 for 105mm)		0.20	182.05		Grass over dark brown, clayey, SAND. Sand is fine to coarse. TOPSOIL
		0.50 - 0.60	D			0.40	181.85		Loose, dark brown, slightly gravelly, SAND. Sand is fine to coarse. Gravel is fine to medium, sub-angular sandstone.
		0.60	S			0.60	181.65		GLACIAL DEPOSITS Loose, light brown, very sandy, GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to medium, sub-angular, quartzite and sandstone.
		0.90 - 1.00	D			1.00	181.25		WEATHERED WOODHEAD HILL ROCK Strong sandstone recovered as fine to coarse, angular to sub-angular as gravel and cobbles.
									WOODHEAD HILL ROCK End of Borehole at 1.00m
Crew: Dynamic Sampling Ltd.					Logger: SS		Weather: Dry		
Equipment: Window Sampling Rig									
Reason for termination of borehole: Refusal on Rock									
Groundwater Remarks: No groundwater observed.									
General Remarks:									
Hole Started: 17/10/2016		Hole Complete:			Version: FINAL		Scale: 1:25		

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS103A Sheet 1 of 1	
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 182.22	
Client: Forrest						GRM Project Ref: P7434		Coordinates 400657 E 385351 N	

Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		0.00 - 0.20	D						Grass over dark brown, clayey, SAND. Sand is fine to coarse. TOPSOIL	
		0.50 - 0.60	D			0.30 181.92		Loose, dark brown, slightly gravelly, SAND. Sand is fine to coarse. Gravel is fine to medium, sub-angular, quartzite and sandstone.		
		0.90 - 1.00	D			0.50 181.72		GLACIAL DEPOSITS Loose, light brown, very sandy GRAVEL with high cobble content. Sand is medium to coarse. Gravel and Cobbles are fine to coarse, angular to sub-angular, sandstone, siltstone.		
		1.00	S	50 (10,14/50 for 95mm)		0.70 181.52		WEATHERED WOODHEAD HILL ROCK Strong SANDSTONE recovered as fine to coarse, angular to sub-angular as gravel and cobbles.		
						1.00 181.22		WOODHEAD HILL ROCK End of Borehole at 1.00m		

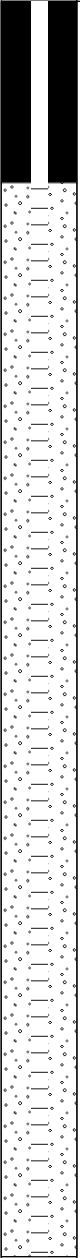
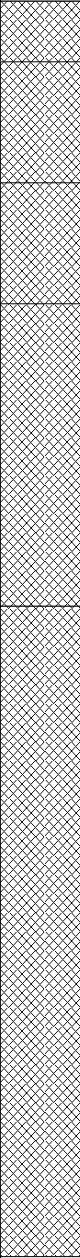
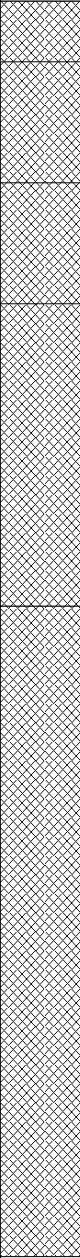
Crew: Dynamic Sampling Ltd			Logger: SS			Weather: Dry		
Equipment: Window Sampling Rig								
Reason for termination of borehole: Refusal on Rock								
Groundwater Remarks: No groundwater observed.								
General Remarks:								
Hole Started: 17/10/2016			Hole Complete:			Version: FINAL		Scale: 1:25

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole			Borehole No WS104 Sheet 1 of 1		
Site Name: Quarry Road, New Mills							Ground Level (mAOD) 181.02		
Client: Forrest					GRM Project Ref: P7434			Coordinates 400709 E 385383 N	

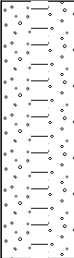
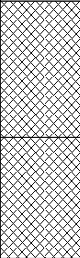
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		0.00 - 0.20	D			0.10	180.92		Vegetation over dark brown, sandy CLAY. Sand is fine to coarse. MADE GROUND	
		0.00 - 0.20	ES			0.40	180.62		Firm (medium strength), dark brown, slightly gravelly, sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, bricks, siltstone and roots. MADE GROUND	
		0.50 - 0.60	D			0.50	180.52		Moderately strong light yellow SANDSTONE boulder recovered as gravel and cobble. MADE GROUND	
		1.00 - 1.10	C	N=5 (1,1/1,2,1,1)					Firm (medium strength), brown mottled greyish brown, and yellowish brown, slightly gravelly CLAY. Gravel is fine to coarse, sub-angular, to sub-rounded, sandstone and brick. MADE GROUND	1
		1.60 - 1.70	D							
		2.00	C	N=6 (1,1/1,1,2,2)						2
		2.50 - 2.60	D							
		2.90 - 3.00	D							
		3.00	C	N=10 (1,2/3,2,2,3)		3.00	178.02		Firm, (medium strength), sandy very gravelly CLAY with pockets of clayey sandy GRAVEL and low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, siltstone, brick and sandstone. MADE GROUND	3
		3.50 - 3.60	D							
	3.90 - 4.00	D								
	4.00	C	50 (50 for 95mm/50 for 20mm)		4.00	177.02		End of Borehole at 4.00m	4	

Crew: Dynamic Sampling Ltd		Logger: SS		Weather: Dry	
Equipment: Window Sampling Rig					
Reason for termination of borehole: Refusal on Rock					
Groundwater Remarks: Damp from 3.7m.					
General Remarks:					
Hole Started: 17/10/2016		Hole Complete:		Version: FINAL	
				Scale: 1:25	

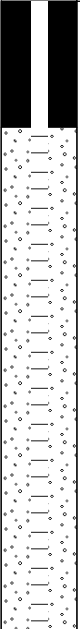
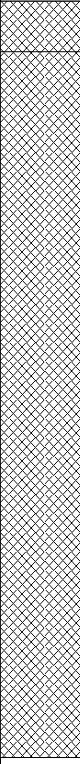
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS105 Sheet 1 of 2	
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.54	
Client: Forrest						GRM Project Ref: P7434		Coordinates 400715 E 385367 N	

Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description		
		Depth	Type	Result							
		0.00 - 0.20	D						Vegetation over dark brown, slightly gravelly CLAY. Sand is fine to coarse, Gravel is fine to medium, angular to sub-angular, brick, roots. MADE GROUND		
		0.00 - 0.20	ES			0.20	180.34				
		0.20 - 0.50	D								
		0.60 - 0.70	D			0.60	179.94				
		1.00 - 1.10	C	N=4 (1,1/1,1,1,1)		1.00	179.54				
		1.50 - 1.60	D							Firm, (Medium strength), brown gravelly CLAY with high cobble content. Gravel is fine to coarse, angular, brick, concrete, metal. MADE GROUND	
		2.00	C	N=5 (2,1/1,2,1,1)		2.00	178.54				
		2.40 - 2.60	D								
		2.80 - 3.00	D								
		3.00 - 3.20	C	N=10 (4,4/3,2,2,3)							
	4.00	C	N=14 (3,4/3,4,4,3)								
Continued on Next Sheet											

Crew: Dynamic Sampling Ltd.		Logger: SS		Weather: Dry	
Equipment: Window Sampling Rig					
Reason for termination of borehole: Target Depth reached					
Groundwater Remarks: No groundwater observed.					
General Remarks:					
Hole Started: 17/10/2016		Hole Complete:		Version: FINAL	
				Scale: 1:25	

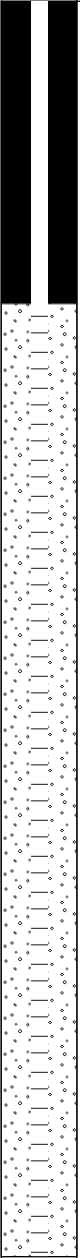
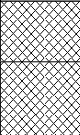
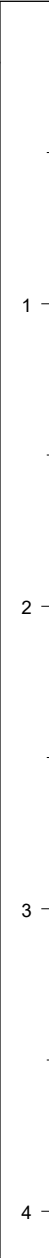
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS105 Sheet 2 of 2		
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.54		
Client: Forrest						GRM Project Ref: P7434		Coordinates 400715 E 385367 N		
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		4.50 -	D	N=19 (4,4/5,5,4,5)		4.60	175.94		Stiff, greyish brown mottled light brown, slightly gravelly CLAY. Gravel is fine to medium, sub-rounded, siltstone and sandstone. MADE GROUND	5
		4.60 -	D							
		4.80								
		5.00	C			5.00	175.54		End of Borehole at 5.00m	
										6
										7
										8
Crew: Dynamic Sampling Ltd.					Logger: SS			Weather: Dry		
Equipment: Window Sampling Rig										
Reason for termination of borehole: Target Depth reached										
Groundwater Remarks: No groundwater observed.										
General Remarks:										
Hole Started: 17/10/2016		Hole Complete:				Version: FINAL		Scale: 1:25		

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS106 Sheet 1 of 1	
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.55	
Client: Forrest						GRM Project Ref: P7434		Coordinates 400687 E 385291 N	

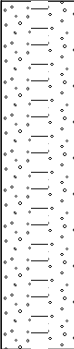
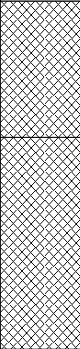
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		0.10 - 0.30	D			0.20	180.35		Vegetation over soft, dark brown, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded, brick and metal. MADE GROUND	
		0.80 - 1.00	D						Stiff (high strength) dark brown, slightly sandy, very gravelly, CLAY with pockets of clayey GRAVEL and COBBLES of fine to coarse, angular flagstone. Sand is fine to coarse.	1
		1.00	C	N=10 (2,3/2,3,3,2)					Gravel is fine to coarse, sub-angular, sandstone, brick. MADE GROUND	
		1.50 - 1.70	D							
		1.90 - 2.00	D							2
		2.00	C	N=16 (3,4/4,3,4,5)						
		2.50 - 2.60	D							
		2.90 - 3.00	D			3.00	177.55		End of Borehole at 3.00m	3
		3.00	C	50 (7,15/50 for 180mm)						4

Crew: Dynamic Sampling Ltd.		Logger: SS		Weather: Dry	
Equipment: Window Sampling Rig					
Reason for termination of borehole: Refusal on Rock					
Groundwater Remarks: Wet from 3.6m					
General Remarks: Slight collapse from 2.5m.					
Hole Started: 17/10/2016		Hole Complete:		Version: FINAL	
				Scale: 1:30	

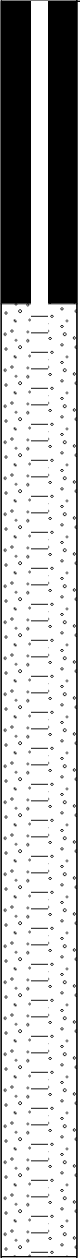
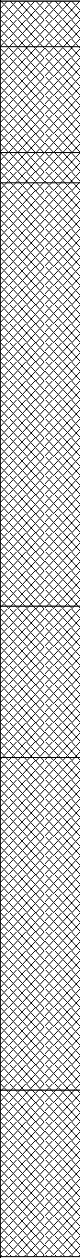
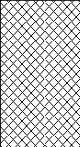
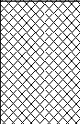
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS107 Sheet 1 of 2	
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.67	
Client: Forrest						GRM Project Ref: P7434		Coordinates 400706 E 385349 N	

Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		0.00 - 0.20	D						Vegetation over soft brown, sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, sandstone, brick, mudstone and roots.	
		0.20 - 0.40	D		0.20	180.47	MADE GROUND		Firm, brown mottled greyish black, slightly gravelly, CLAY. Gravel is fine to coarse, angular to sub-angular, sandstone and ash.	
		0.90	D		0.80	179.87	MADE GROUND	Loose to medium dense, dark grey clayey SAND & GRAVEL with pockets of slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, sub-angular, mudstone, sandstone, brick, ash. Gravel in CLAY is fine to medium.		
		1.00	C	N=5 (1,1/1,1,1,2)			MADE GROUND			
		1.50 - 1.70	D		1.40	179.27		Loose, brown clayey, very gravelly SAND with pockets of slightly gravelly, sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular sandstone.		
		2.00	C	N=6 (2,1/2,1,1,2)				MADE GROUND		
		2.00 - 2.30	D							
		3.00	C	N=10 (2,3/3,2,3,2)						
		3.50 - 3.70	D							
		3.90 - 4.00	D							
		4.00	C	N=9 (4,1/1,2,3,3)						
Continued on Next Sheet										

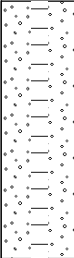
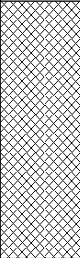
Crew: Dynamic Sampling Ltd.		Logger: SS		Weather:	
Equipment: Window sampling rig.					
Reason for termination of borehole: Target depth reached.					
Groundwater Remarks: No groundwater observed.					
General Remarks:					
Hole Started: 17/10/2016		Hole Complete:		Version: FINAL	Scale: 1:25

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS107 Sheet 2 of 2		
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.67		
Client: Forrest						GRM Project Ref: P7434		Coordinates 400706 E 385349 N		
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		4.50 - 4.80	C	N=14 (4,4/3,3,4,4)		4.60	176.07		Medium dense, greyish brown, clayey, very sandy, GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular, sandstone. MADE GROUND	5
		5.00				5.30	175.37			End of Borehole at 5.30m
										8
Crew: Dynamic Sampling Ltd.					Logger: SS			Weather:		
Equipment: Window sampling rig.										
Reason for termination of borehole: Target depth reached.										
Groundwater Remarks: No groundwater observed.										
General Remarks:										
Hole Started: 17/10/2016		Hole Complete:				Version: FINAL		Scale: 1:25		

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS108 Sheet 1 of 2	
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.60	
Client: Forrest						GRM Project Ref: P7434		Coordinates 400686 E 385349 N	

Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		0.00 - 0.15	D			0.15	180.45		Vegetation over dark brown, sandy, gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium, sub-angular brick and roots. MADE GROUND	1
		0.40 - 0.50	D			0.50	180.10		Strong SANDSTONE boulder recovered as gravel and cobbles. MADE GROUND	
		0.60 - 0.80	D			0.60	180.00		Firm, greyish black, slightly gravelly, very sandy, CLAY. Sand is fine to coarse. Gravel is fine to coarse, sub-angular sandstone, concrete, ash. MADE GROUND	
		1.00 - 1.40	C D	N=6 (1,1/2,1,1,2)					Firm, light grey, slightly sandy, very sandy, CLAY. Sand is fine to very coarse. Gravel is fine to coarse, sandstone, ash and brick. MADE GROUND	
		2.00 - 2.40	C D	N=6 (1,1/1,1,2,2)		2.00	178.60		Loose, black and dark brown, clayey, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded sandstone. MADE GROUND <i>Sandstone boulder recovered as angular cobbles.</i>	2
		2.70 - 3.00	D			2.50	178.10		Stiff (high strength), greyish brown mottled brown, sandy, gravelly CLAY. Gravel is fine to coarse, brick and ash. MADE GROUND	
		3.00	C	N=10 (2,2/2,3,2,3)						3
		3.70 - 4.00	D			3.60	177.00		Medium dense, sandy, very clayey GRAVEL with pockets of sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, sandstone. MADE GROUND	
		4.00	C	N=15 (3,3/4,4,4,3)						
	Continued on Next Sheet									

Crew: Dynamic Sampling Ltd.		Logger: SS		Weather: Wet	
Equipment: Window Sampling Rig.					
Reason for termination of borehole: Refusal on Rock					
Groundwater Remarks: No groundwater observed.					
General Remarks:					
Hole Started: 17/10/2016		Hole Complete:		Version: FINAL	
				Scale: 1:25	

		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Windowless Sample Borehole				Borehole No WS108 Sheet 2 of 2		
Site Name: Quarry Road, New Mills								Ground Level (mAOD) 180.60		
Client: Forrest					GRM Project Ref: P7434			Coordinates 400686 E 385349 N		
Installation/ Backfill	Water Strike	Samples/Tests			Dynamic Probing (Blows per 100mm)	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth	Type	Result						
		4.50 - 5.00	D							
		5.00	C	50 (25 for 10mm/50 for 235mm)		5.00	175.60		End of Borehole at 5.00m	5
										6
										7
										8
Crew: Dynamic Sampling Ltd.					Logger: SS			Weather: Wet		
Equipment: Window Sampling Rig.										
Reason for termination of borehole: Refusal on Rock										
Groundwater Remarks: No groundwater observed.										
General Remarks:										
Hole Started: 17/10/2016		Hole Complete:				Version: FINAL		Scale: 1:25		

In-Situ Gas Monitoring Results

Project Name: Marsh Lane, New mills
 Project Number: P7434
 Client: HT Forest Ltd
 Date: 25 October 2016
 Weather: Dry
 Atmospheric Pressure (mb): 1002
 Pressure Trend: Rising
 Equipment: Gas Data GFM430
 Operator: Tom Robson

Well ID	Ground Gases												
	Response Zone (mbegl)			Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
RB101	6.2	8.2	NS	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
RB104	7.0	9.0	NS	0.00	0.00	0.00	0.00	21.20	21.20	0.0	0.0	N/R	N/R
RB106	5.6	8.1	NS	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
WS101	1.0	5.0	NS	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
WS104	0.7	4.0	MG	0.00	0.00	0.40	0.40	20.50	20.50	0.0	0.0	N/R	N/R
WS105	0.6	5.0	MG	0.00	0.00	0.10	0.10	20.70	20.70	0.0	0.0	N/R	N/R
WS106	0.5	2.5	MG	0.00	0.00	0.00	0.00	21.00	21.00	0.0	0.0	N/R	N/R
WS107	1.0	5.3	MG	0.00	0.00	0.00	0.00	20.80	20.80	0.0	0.0	N/R	N/R
WS108	1.0	5.0	MG	0.00	0.00	0.60	0.60	20.00	20.00	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
N/D	N/D
6.17	8.83
N/D	N/D
N/D	N/D
N/D	3.78
N/D	4.70
N/D	2.44
5.20	5.30
N/D	4.64

Comments: WS101 could not find, WS106 and WS108 was not installed on this monitoring round

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	Made Ground
%	By volume	NS Natural Strata



In-Situ Gas Monitoring Results

Project Name: Marsh Lane, New mills
 Project Number: P7434
 Client: HT Forest Ltd
 Date: 03 November 2016
 Weather: Wet
 Atmospheric Pressure (mb): 997
 Pressure Trend: Rising
 Equipment: Gas Data GFM430
 Operator: Tom Robson

Well ID	Ground Gases												
	Response Zone (mbegl)			Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
RB101	6.2	8.2	NS	0.00	0.00	0.00	0.00	20.30	20.30	0.0	0.0	N/R	N/R
RB104	7.0	9.0	NS	0.00	0.00	0.00	0.00	20.30	20.30	0.0	0.0	N/R	N/R
RB106	5.6	8.1	NS	0.00	0.00	0.30	0.30	19.20	19.20	0.0	0.0	N/R	N/R
WS101	1.0	5.0	NS	0.00	0.00	1.60	1.60	17.50	17.50	0.0	0.0	N/R	N/R
WS104	0.7	4.0	MG	0.00	0.00	0.50	0.50	19.80	19.80	0.0	0.0	N/R	N/R
WS105	0.6	5.0	MG	0.00	0.00	0.10	0.10	20.10	20.10	0.0	0.0	N/R	N/R
WS106	0.5	2.5	MG	0.00	0.00	0.00	0.00	20.20	20.20	0.0	0.0	N/R	N/R
WS107	1.0	5.3	MG	0.00	0.00	0.40	0.40	19.70	19.70	0.0	0.0	N/R	N/R
WS108	1.0	5.0	MG	0.00	0.00	0.90	0.90	19.50	19.50	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
6.98	8.14
7.50	8.70
7.85	8.10
N/D	5.03
N/D	3.79
N/D	5.18
N/D	2.45
N/D	5.29
N/D	4.66

Comments:

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	MG Made Ground
%	By volume	NS Natural Strata



In-Situ Gas Monitoring Results

Project Name: Marsh Lane, New mills
 Project Number: P7434
 Client: HT Forest Ltd
 Date: 21 November 2016
 Weather: Wet
 Atmospheric Pressure (mb): 987
 Pressure Trend: Falling
 Equipment: Gas Data GFM430
 Operator: George Salloway

Well ID	Ground Gases												
	Response Zone (mbegl)			Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
RB101	6.2	8.2	NS	0.00	0.00	0.50	0.50	19.60	19.60	0.0	0.0	N/R	N/R
RB104	7.0	9.0	NS	0.00	0.00	0.20	0.20	20.10	20.20	0.0	0.0	N/R	N/R
RB106	5.6	8.1	NS	0.00	0.00	0.70	0.70	19.00	19.00	0.0	0.0	N/R	N/R
WS101	1.0	5.0	NS	0.00	0.00	0.70	0.60	18.70	18.80	1.1	0.0	N/R	N/R
WS104	0.7	4.0	MG	0.00	0.00	2.70	2.70	16.40	16.40	0.1	0.1	N/R	N/R
WS105	0.6	5.0	MG	0.00	0.00	0.80	0.80	18.00	18.00	0.0	0.0	N/R	N/R
WS106	0.5	2.5	MG	0.00	0.00	0.10	0.10	20.70	20.70	0.0	0.0	N/R	N/R
WS107	1.0	5.3	MG	0.00	0.00	0.30	0.30	19.90	20.70	0.0	0.0	N/R	N/R
WS108	1.0	5.0	MG	0.00	0.00	0.70	0.70	19.00	19.00	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
5.30	8.00
5.85	8.60
4.65	8.10
4.03	4.90
N/D	3.85
N/D	5.00
N/D	2.40
5.00	5.10
N/D	4.60

Comments:

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	
N.R.	Not Recorded	a. Methane $\geq 1\%$ v/v
PID	Photo-Ionising Detector	b. Carbon Dioxide $\geq 5\%$ v/v
%	By volume	MG Made Ground
		NS Natural Strata



In-Situ Gas Monitoring Results

Project Name: Marsh Lane, New mills
 Project Number: P7434
 Client: HT Forest Ltd
 Date: 05 December 2016
 Weather: Wet
 Atmospheric Pressure (mb): 1002
 Pressure Trend: Rising
 Equipment: Gas Data GFM430
 Operator: Tom Robson

Well ID	Ground Gases												
	Response Zone (mbegl)			Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
RB101	6.2	8.2	NS	0.00	0.00	0.00	0.00	20.10	20.10	0.0	0.0	N/R	N/R
RB104	7.0	9.0	NS	0.00	0.00	0.00	0.00	19.10	19.10	0.0	0.0	N/R	N/R
RB106	5.6	8.1	NS	0.00	0.00	0.00	0.00	20.10	20.10	0.0	0.0	N/R	N/R
WS101	1.0	5.0	NS	0.00	0.00	1.30	1.30	17.50	17.50	0.0	0.0	N/R	N/R
WS104	0.7	4.0	MG	0.00	0.00	2.10	2.10	16.00	16.00	0.0	0.0	N/R	N/R
WS105	0.6	5.0	MG	0.00	0.00	1.20	1.20	18.40	18.40	0.0	0.0	N/R	N/R
WS106	0.5	2.5	MG										
WS107	1.0	5.3	MG	0.00	0.00	0.50	0.50	19.80	19.80	0.0	0.0	N/R	N/R
WS108	1.0	5.0	MG	0.00	0.00	0.50	0.50	19.80	19.80	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
5.50	8.14
5.88	8.20
6.00	8.83
4.63	5.02
N/D	3.78
N/D	5.17
5.10	5.25
N/D	4.66

Comments: WS106 WAS DESTROYED

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	Made Ground
%	By volume	NS Natural Strata



In-Situ Gas Monitoring Results

Project Name: Marsh Lane, New mills
 Project Number: P7434
 Client: HT Forest Ltd
 Date: 21 December 2016
 Weather: Wet
 Atmospheric Pressure (mb): 994
 Pressure Trend: Falling
 Equipment: Gas Data GFM430
 Operator: Tom Robson

Well ID	Ground Gases												
	Response Zone (mbegl)			Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
	Top	Base	Strata	Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
RB101	6.2	8.2	NS	0.00	0.00	0.00	0.00	20.10	20.10	0.0	0.0	N/R	N/R
RB104	7.0	9.0	NS	0.00	0.00	0.90	0.90	19.1	19.10	0.0	0.0	N/R	N/R
RB106	5.6	8.1	NS	0.00	0.00	0.00	0.00	20.20	20.20	0.0	0.0	N/R	N/R
WS101	1.0	5.0	NS	0.00	0.00	0.00	0.00	20.20	20.20	0.0	0.0	N/R	N/R
WS104	0.7	4.0	MG	0.00	0.00	2.20	2.20	17.00	17.00	0.0	0.0	N/R	N/R
WS105	0.6	5.0	MG	0.00	0.00	1.50	1.50	17.90	17.90	0.0	0.0	N/R	N/R
WS106	0.5	2.5	MG										
WS107	1.0	5.3	MG	0.00	0.00	1.00	1.00	19.10	19.10	0.0	0.0	N/R	N/R
WS108	1.0	5.0	MG	0.00	0.00	1.20	1.20	19.20	19.20	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
5.50	8.15
6.15	8.23
6.10	8.83
N/D	
N/D	3.80
N/D	5.13
5.11	5.21
N/D	4.70

Comments: WS106 DESTROYED

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	MG Made Ground
%	By volume	NS Natural Strata



In-Situ Gas Monitoring Results

Project Name: Marsh Lane, New mills
 Project Number: P7434
 Client: HT Forest Ltd
 Date: 06 January 2017
 Weather: Wet
 Atmospheric Pressure (mb): 1032
 Pressure Trend: Falling
 Equipment: Gas Data LMSXi
 Operator: Liam Press

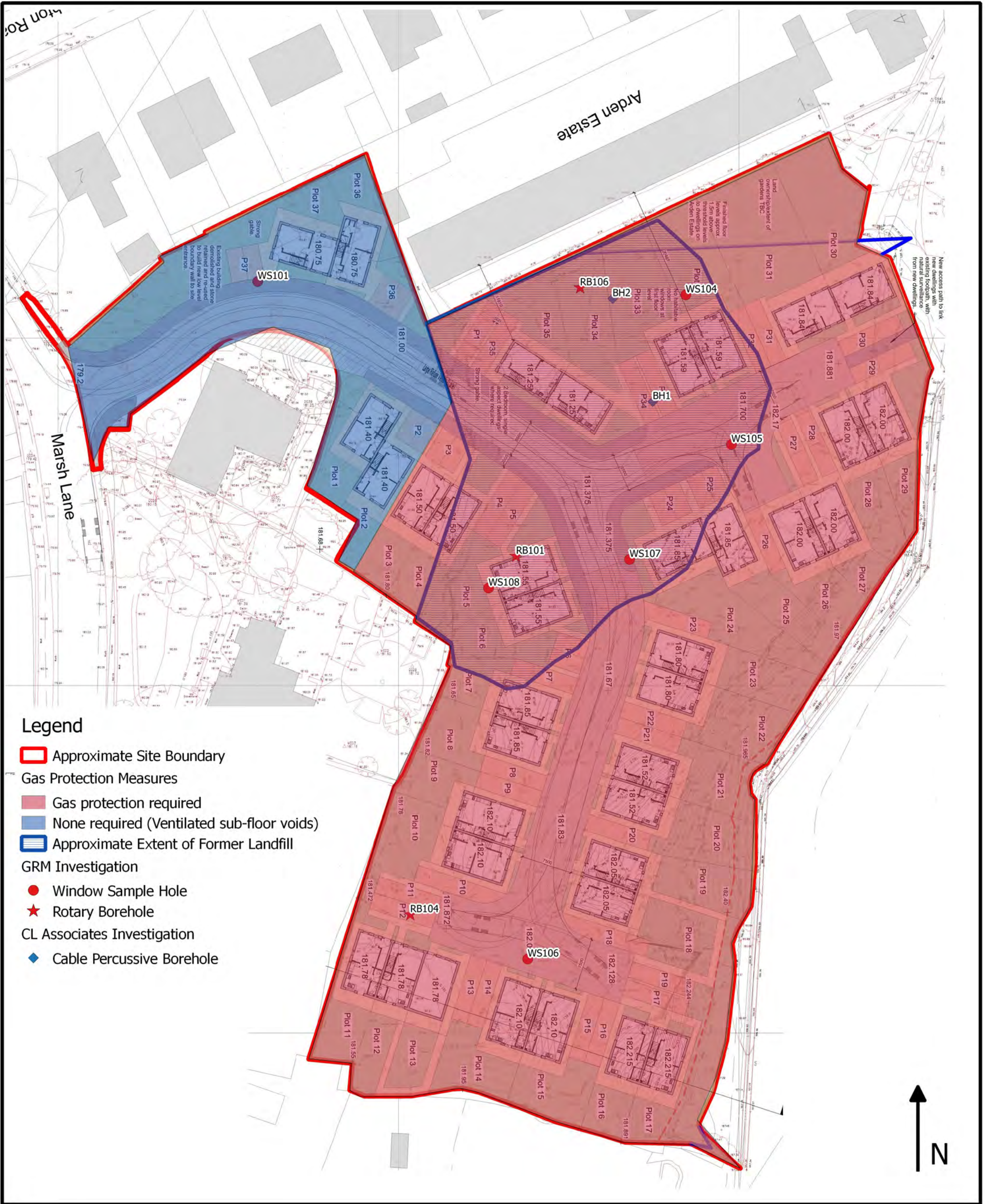
Well ID	Response Zone (mbegl)			Ground Gases									
	Top	Base	Strata	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Gas Flow (l/h)		PID Reading (ppm)	
				Peak	Steady	Peak	Steady	Low	Steady	Peak	Steady	Peak	Steady
RB101	6.2	8.2	NS	0.00	0.00	0.00	0.00	21.00	21.00	0.0	0.0	N/R	N/R
RB104	7.0	9.0	NS	0.00	0.00	0.00	0.00	21.00	21.00	0.0	0.0	N/R	N/R
RB106	5.6	8.1	NS	0.00	0.00	0.40	0.40	20.70	20.70	0.0	0.0	N/R	N/R
WS101	1.0	5.0	NS	0.00	0.00	2.00	2.00	17.40	17.40	0.0	0.0	N/R	N/R
WS104	0.7	4.0	MG	0.00	0.00	1.40	1.40	19.60	19.60	0.0	0.0	N/R	N/R
WS105	0.6	5.0	MG	0.00	0.00	0.10	0.10	20.80	20.80	0.0	0.0	N/R	N/R
WS106	0.5	2.5	MG										
WS107	1.0	5.3	MG	0.00	0.00	0.10	0.10	20.90	20.90	0.0	0.0	N/R	N/R
WS108	1.0	5.0	MG	0.00	0.00	0.90	0.90	20.30	20.30	0.0	0.0	N/R	N/R

Groundwater	
Depth to Groundwater (mbegl)	Total Well Depth (mbegl)
5.50	8.15
6.10	8.83
6.02	8.10
4.55	5.03
N/D	3.83
N/D	5.20
5.13	5.23
N/D	4.65

Comments: WS106 DESTROYED

Notes

L.E.L.	Lower Explosive Limit (100% L.E.L. = 5% Flammable Gas)	Highlighted cell for following conditions:
N.D.	Not Detected	a. Methane $\geq 1\%$ v/v
N.R.	Not Recorded	b. Carbon Dioxide $\geq 5\%$ v/v
PID	Photo-Ionising Detector	MG Made Ground
%	By volume	NS Natural Strata



Legend

- Approximate Site Boundary
- Gas Protection Measures
 - Gas protection required
 - None required (Ventilated sub-floor voids)
- Approximate Extent of Former Landfill
- GRM Investigation
 - Window Sample Hole
 - Rotary Borehole
- CL Associates Investigation
 - Cable Percussive Borehole

NOTES:

CLIENT: HT Forrest Ltd	TITLE: Ground Gas Protection Measures Plan	PROJECT No: P7434	DATE: 11/2016	 GRM Development Solutions Ltd Laurus House, First Ave, Centrum 100, Burton-on-Trent, Staffordshire Tel: 01283 551 249 Fax: 01283 211 968 mail@grm-uk.com www.grm-uk.com
PROJECT: Land off Marsh Lane, New Mills		DESIGN/DRAWN: SS	ISSUE: FINAL	
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